

IN THE CLAIMS:

Please cancel claims 1-13 without prejudice or disclaimer, and substitute new
Claims 14-26 therefor as follows:

Claims 1-13 (Cancelled).

14. (New) An optical system comprising:

an optical fiber path suitable for propagating an optical signal at least in a first
direction;

a plurality M of optical line amplifiers disposed along said optical fiber path so as
to divide said optical fiber path in N spans of optical fiber, said spans of optical fiber
comprising at least one transmission optical fiber having an effective length L_{eff} ;

an optical phase conjugation device associated to an amplifier of said plurality of
amplifiers; and

an optical fiber length disposed upstream from said optical phase conjugation
device and a further optical amplifier associated to said optical fiber length said optical
fiber length having the same sign of dispersion of said transmission optical fiber and a
higher dispersion coefficient, in absolute value, at a wavelength of said optical signal,
said optical fiber length being adapted for introducing an accumulated dispersion
between 0.6 and 1.5 times a dispersion accumulated in an effective length L_{eff} of said
transmission optical fiber.

15. (New) The optical system according to claim 14, wherein said optical fiber
length has an absolute value of dispersion coefficient higher than or equal to two times
the dispersion coefficient of said transmission optical fiber.

16. (New) The optical system according to claim 15, wherein said optical fiber length has an absolute value of dispersion coefficient higher than or equal to three times the dispersion coefficient of said transmission optical fiber.

17. (New) The optical system according to claim 14, wherein said optical line amplifiers comprise erbium-doped fiber amplifiers.

18. (New) The optical system according to claim 14, wherein said further optical amplifier provides an output power higher than an average output power of said plurality of line amplifiers.

19. (New) The optical system according to claim 14, wherein said optical fiber length has a nonlinear coefficient higher than a nonlinear coefficient of said transmission optical fiber.

20. (New) The optical system according to claim 14, wherein said optical fiber length is adapted for introducing an accumulated dispersion higher than or equal to 0.8 times the dispersion accumulated in an effective length L_{eff} of said transmission optical fiber.

21. (New) The optical system according to claim 14, wherein said optical fiber length is adapted for introducing an accumulated dispersion lower than or equal to 1.2 times the dispersion accumulated in an effective length L_{eff} of said transmission optical fiber.

22. (New) The optical system according to claim 14, wherein said transmission optical fiber has a dispersion higher than or equal to 0.5 ps/nm/km, in absolute value, at the signal wavelength.

23. (New) The optical system according to claim 14, further comprising a transmitting station and a receiving station, said transmitting station being connected at an input end and said receiving station being connected to an output end of said optical fiber path.

24. (New) A method for assembling an optical system suitable for propagating an optical signal, comprising the steps of:

providing a plurality M of optical line amplifiers;

connecting said plurality of optical line amplifiers by N spans of optical fiber so as to form an optical fiber path, said spans of optical fiber comprising at least one transmission optical fiber having an effective length L_{eff} ;

associating a phase conjugation device to one of said optical line amplifiers;

connecting an optical fiber length upstream from said optical phase conjugation device, said optical fiber length having the same sign of dispersion of said transmission optical fiber and a higher dispersion coefficient, in absolute value, at a wavelength of said optical signal, said optical fiber length being adapted for introducing an accumulated dispersion between 0.6 and 1.5 times a dispersion accumulated in an effective length L_{eff} of said transmission optical fiber; and

associating a further optical amplifier to said optical fiber length.

25. (New) A method of operating an optical transmission system comprising an optical fiber path comprising at least one transmission optical fiber having an effective length L_{eff} and a plurality of optical line amplifiers disposed along said optical fiber path, said method comprising:

inserting an optical signal at an input end of said optical fiber path;

amplifying said optical signal along said fiber path by said plurality of optical line amplifiers;

phase-conjugating said optical signal at one of said line amplifiers;

before said step of phase-conjugating, inserting said optical signal at an input end of an optical fiber length having the same sign of dispersion of said transmission optical fiber and a higher dispersion coefficient, in absolute value, at a wavelength of said optical signal, said optical fiber length being adapted for introducing an accumulated dispersion between 0.6 and 1.5 times a dispersion accumulated in an effective length L_{eff} of said transmission optical fiber; and

amplifying said optical signal in association with said optical fiber length.

26. (New) A method of upgrading an optical transmission system comprising an optical fiber path, the optical fiber path including at least one transmission optical fiber having an effective length L_{eff} and a plurality of optical line amplifiers disposed along said optical fiber path, said method comprising:

associating a phase conjugation device to one of said plurality of optical amplifiers;

connecting an optical fiber length upstream from said phase conjugation device, said optical fiber length having the same sign of dispersion of said transmission optical fiber and a higher dispersion coefficient, in absolute value, at a wavelength of said optical signal, said optical fiber length being adapted for introducing an accumulated dispersion between 0.6 and 1.5 times a dispersion accumulated in an effective length L_{eff} of said transmission optical fiber; and

associating a further optical amplifier to said optical fiber length.